Dominique Delteil Consultant

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www.Delteil-Consultant.com

Winemaking Techniques to Maximize Fruit Retention and Color Stability

LALLEMAND

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Winemaking Good Practices to build a fruity balanced wine, to reach market segment goals with a conforming longevity,

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1.
Which are the successful wines?

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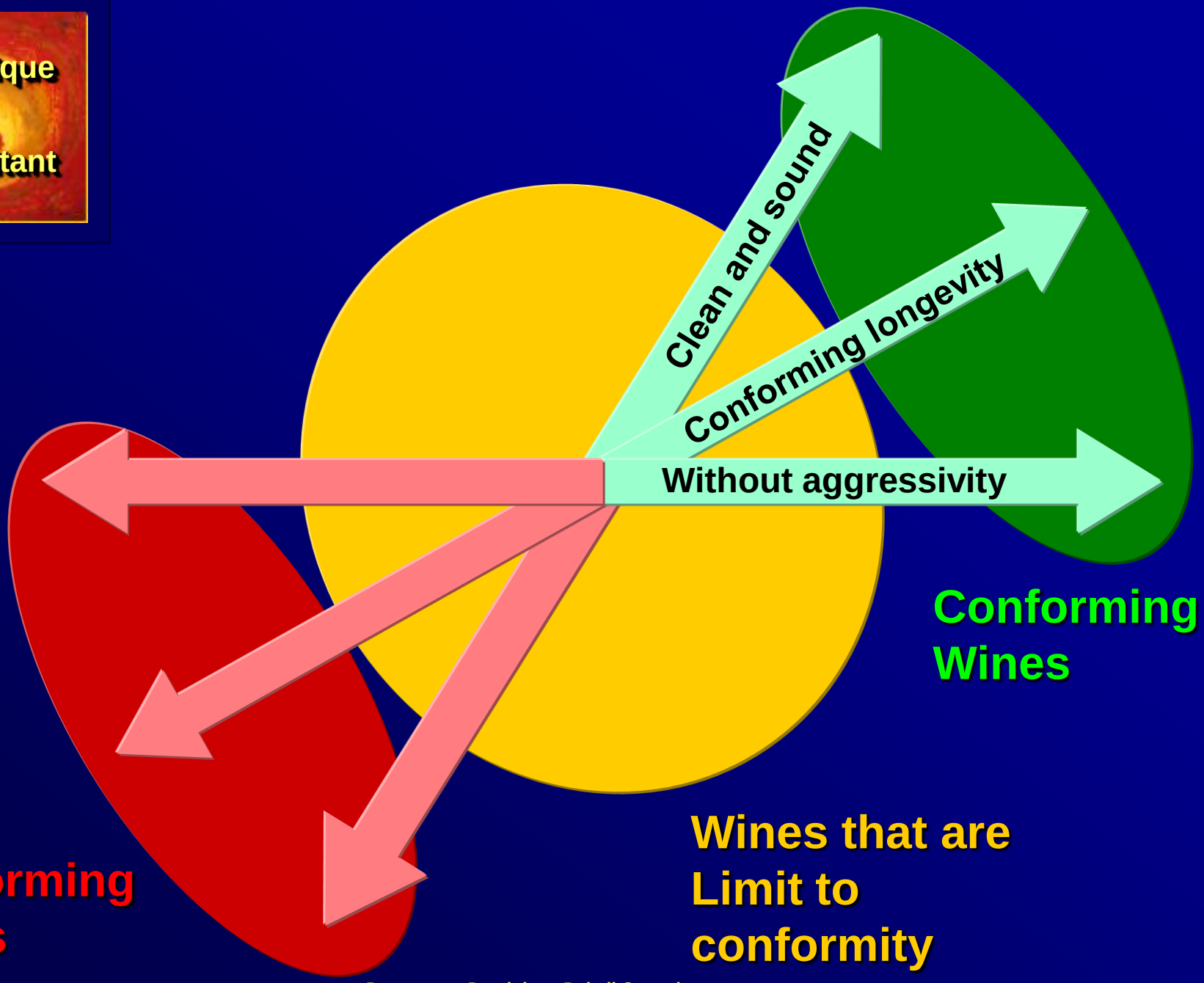

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Number 1 Axis: To build the right longevity

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With a colloidal matrix sufficiently concentrated, balanced and stabilized

1. The right pH in the juice and the wine: a very powerful motor for the colloidal balances, the most powerful
2. Sufficient concentration with macromolecules from grape, yeast, bacteria, oak
3. Right concentration with compounds that participate to different families of aromas and their right interactions with macromolecules.
   Often, interactions are more important for sensorial expression than the molecular concentration itself

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Right concentration with compounds that participate to different families of aromas and their right interactions with macromolecules

1. Sulfur like aromas and tastes
2. Chemical and solvent like aromas and tastes
3. Herbaceous and vegetal like aromas and tastes
4. Fruits and spices like aromas and tastes
5. Burning, cooked and / or pharmaceutical like aromas and taste

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Some important considerations

- Fruity and spicy like aromas and taste, balanced acidity, roundness and length can express and last (longevity) only if :
  - The other 4 aromatic families are:
    - at enough low molecular concentration
    - in enough intense interaction with macromolecules
  - The compounds that may participate to fruit and spicy like aromas are in enough intense interaction with macromolecules

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Manage pH

- Tartaric acid immediately in the fresh grape
- Note: the most efficient and eliminate the potassium that is in excess

- Don’t listen to trendy talks about malic and lactic...

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Take interesting macromolecules

- Enough maturity of grapes cells (cell walls, aromas, pigments, tannins interacting with grape polysaccharides) and enough maceration
- Right yeast strain and right inactive yeast at the right moment, including after membrane treatments
- Right lactic bacteria strain
- Right oak, at the right dosage, at the right moments, starting with fresh grapes

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Do not eliminate interesting macromolecules

- **Be careful with excessive maceration or oak for too much time : they destabilize interesting macromolecule complexes**
- **Be very careful with excessive finings**
- **DO NOT USE copper sulfate or copper citrate = fruit killers!**
- **Work with membrane as soon as possible: to early balance the wine and be able to start again aging with the right inactivate yeast and the right oak**

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Other interesting axis (1)

- Eliminate potassium (and calcium) as soon as possible: pH membranes, resins or electrodialysis
- Absorption, as soon as possible, of compounds that participate to defects (sulfur, herbaceous, chemical, cooked-pharmaceutical) : for example Noblesse with segmented fractionated additions, starting early during vinification and aging

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Other interesting axis (2)

Avoid the 4 mistakes of micro-oxygenation:

1. Too much oxygen
2. Too much time
3. Too late during the life of wine
4. Too much contamination

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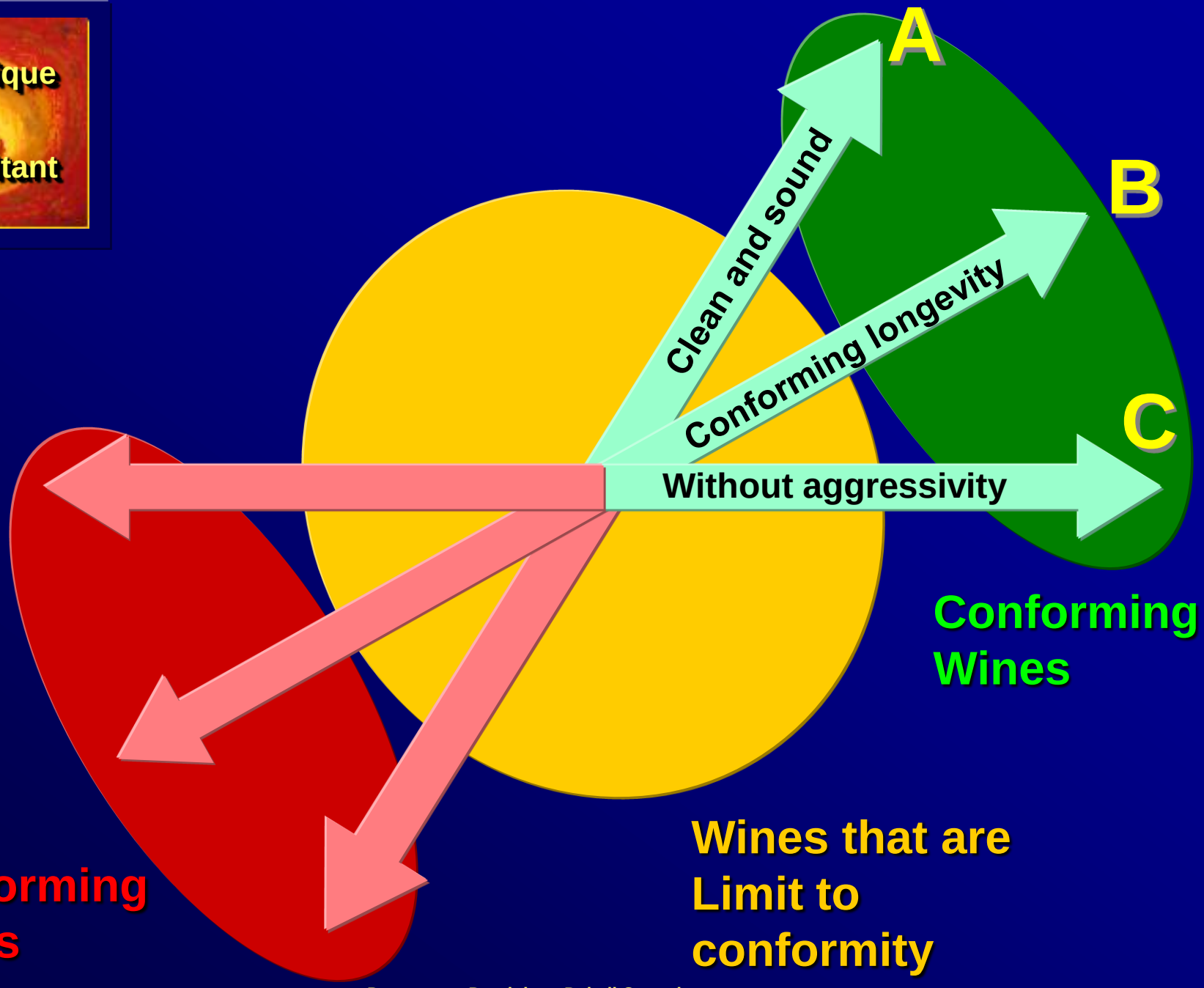

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2.
Vinification Strategy

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Winemaking goals and main risks management to reach the main market goals : A, B and C

- Taking fruit aromas from pulp and skin, pigments, polysaccharides from pulp and skin, hydrosoluble tannins from the skin
- Not extracting herbaceous aromas and aggressive tannins in the inner layers of the skin
- Extracting as few as possible ethanol soluble tannins.

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Winemaking goals and main risks management to reach the main market goals : A, B and C (2)

- Avoiding sulfur like off odors: they amplify herbaceous and aggressive sensations on the nose and in mouth (metallic taste and bitterness).
  - The lowest efficient level of SO2 before fermentation
  - The right protection and nutrition of the yeast during fermentation
  - The right oxygenation program during maceration
  - The right program of racking, agitation during aging

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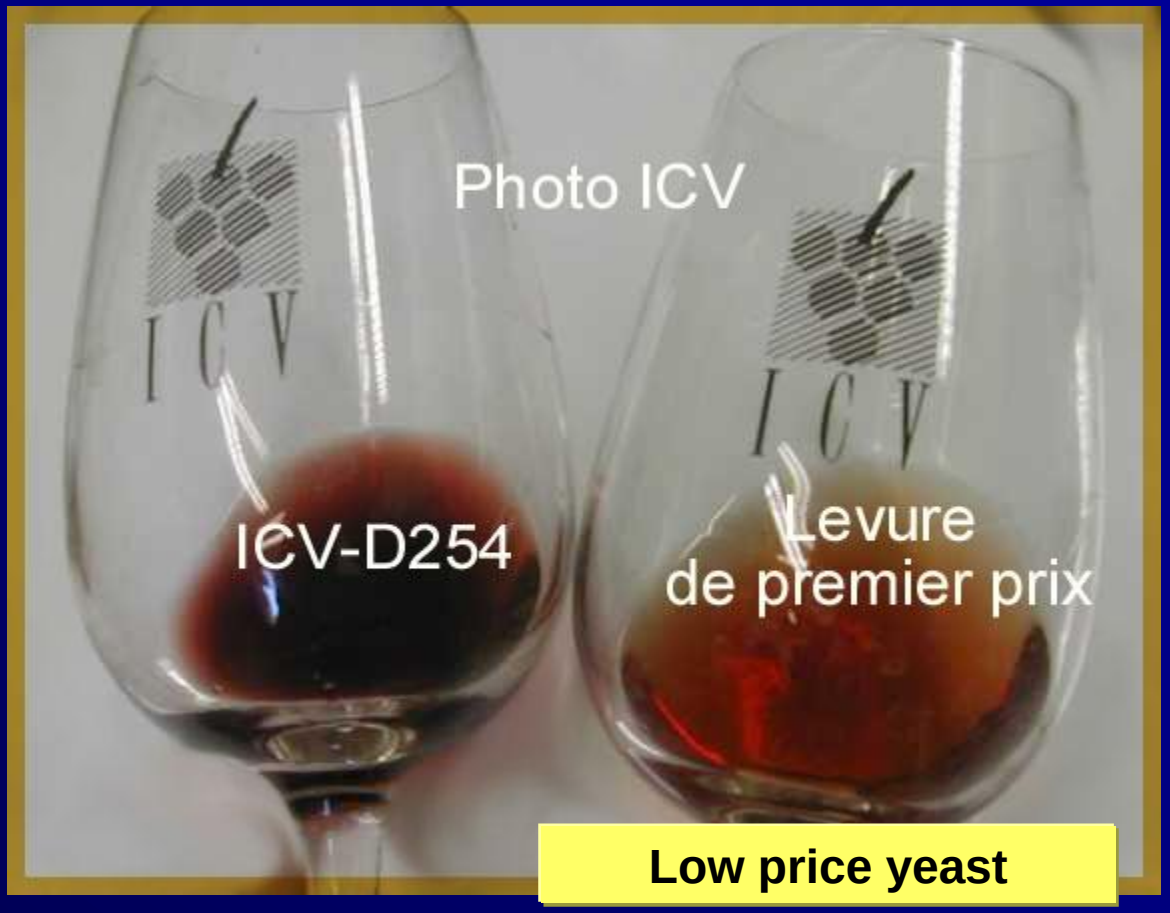
A simple proof to demonstrate that yeast may have an impact on color stabilization

Vintage: 1997
Photo: 2004

From: ICV Internet site www.icv.fr



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Full bodied Pinot Noir with barrel aging

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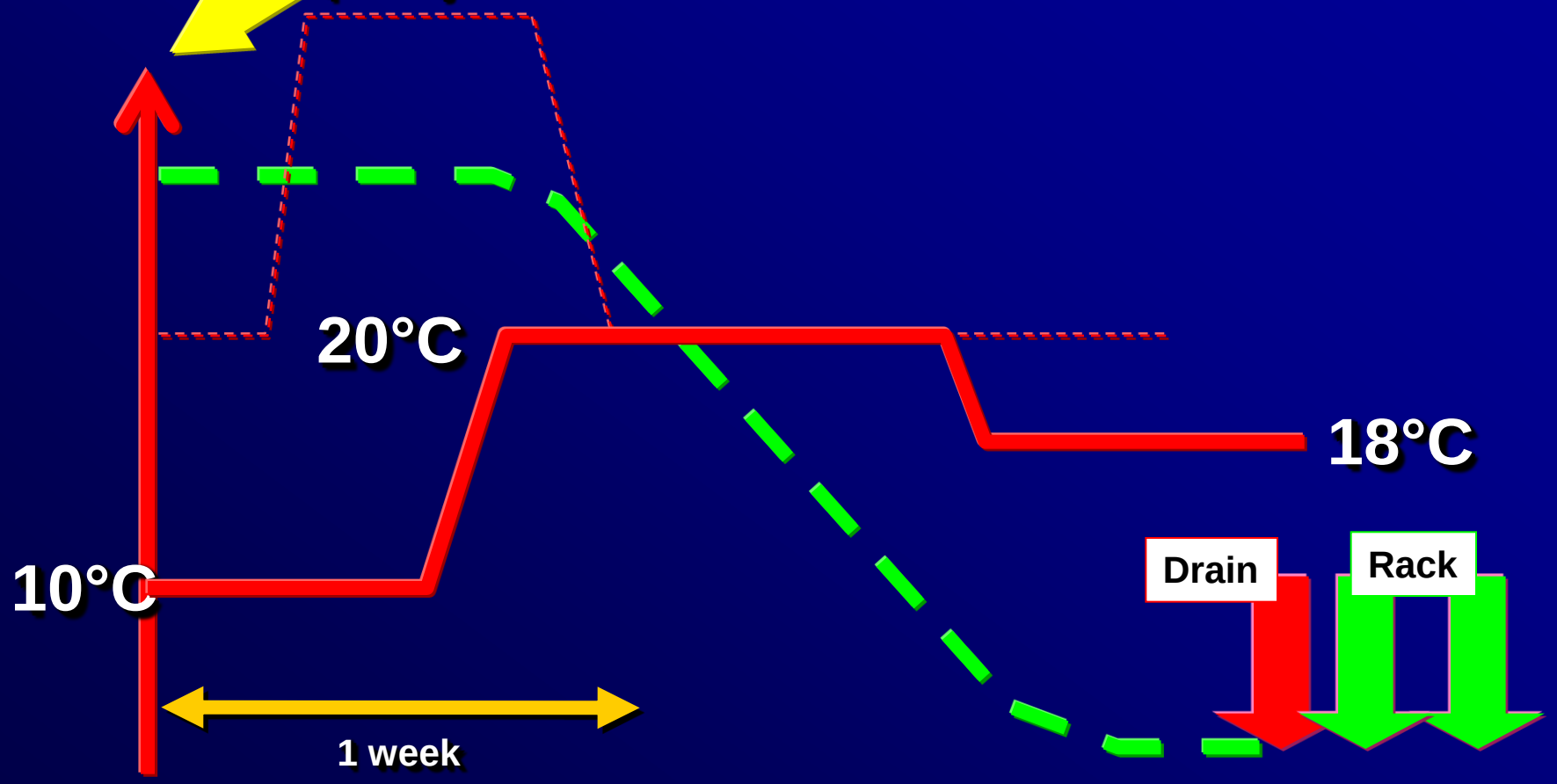
Temperature management with Cold Prefermentative Maceration

SO2: 2-3 g/hl. No more, we are going to talk soon about pH adjustment !



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Yeast protection and nutrition strategy

On grapes: “hl”= 100 kg
On juice and wine: “hl” = 100 L

GoFerm Protect
40 g/hl

OptiRed 30 g/hl

Lactic Bacteria. VP41 One Step +
Fermaid O 20 g/hl (if >14%vol.)

Fermaid K
30 g/hl

Reduless?
1 g/hl.
Not more at this stage

Lalvin RC212
or
ICV D21
or
Cross Evolution
at 30 g/hl

Noblesse
10 g/hl

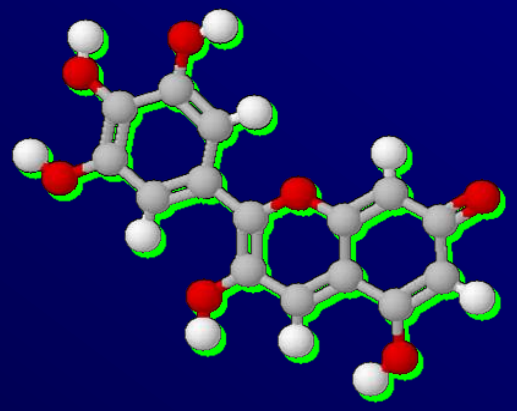
Drain

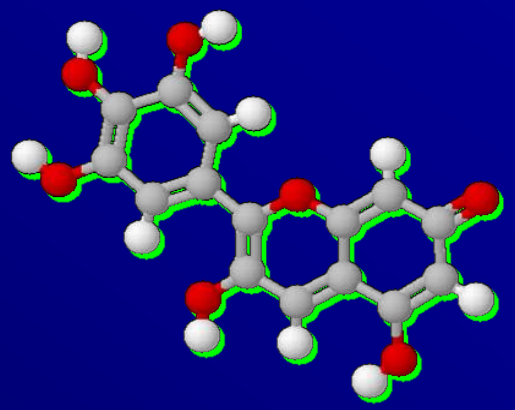
Rack

1 week

OptiRed® in action on the colloidal matrix

Before





Anthocyanins exposed to instability reactions

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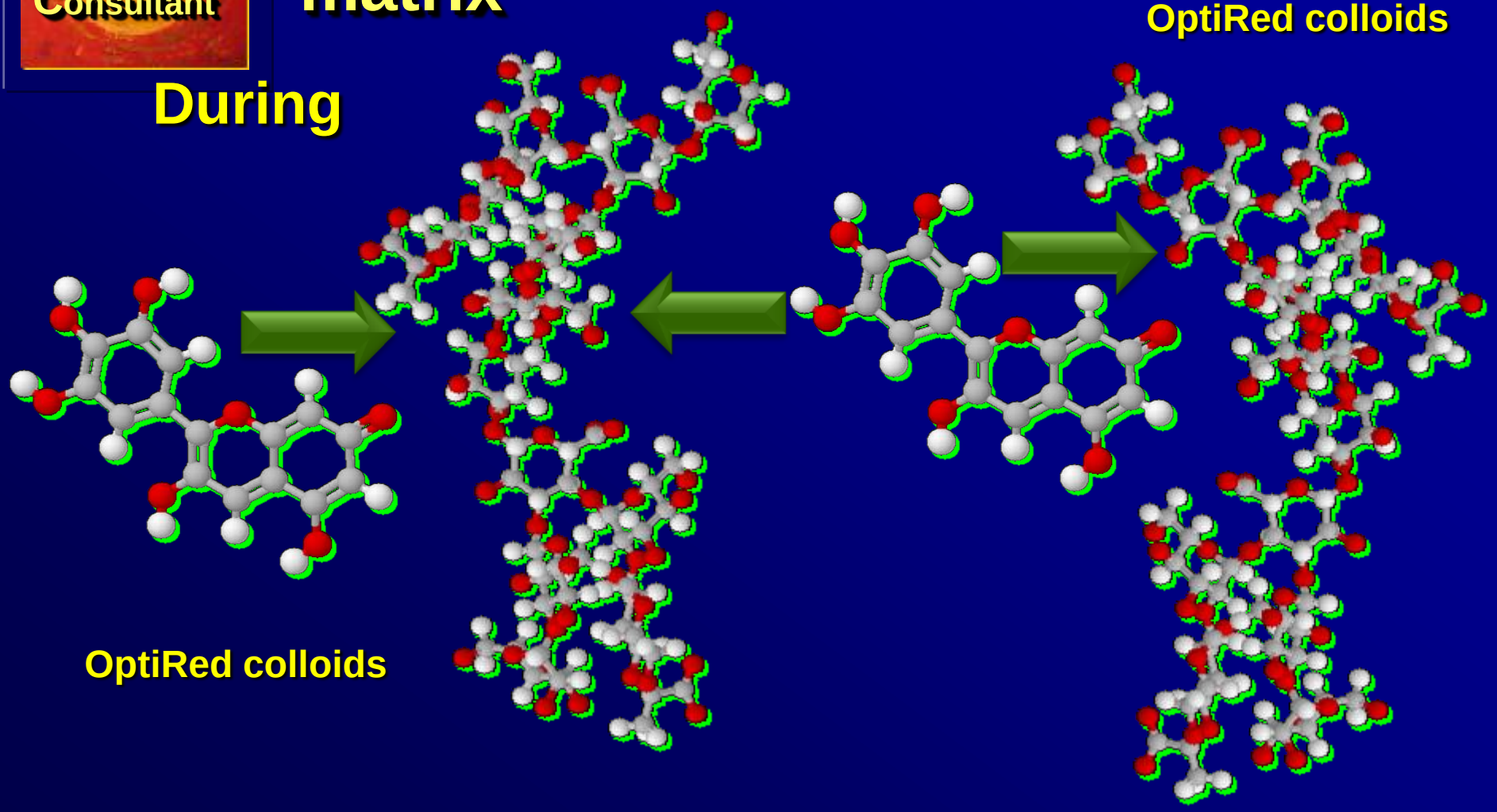
OptiRed® in action on the colloidal matrix

During



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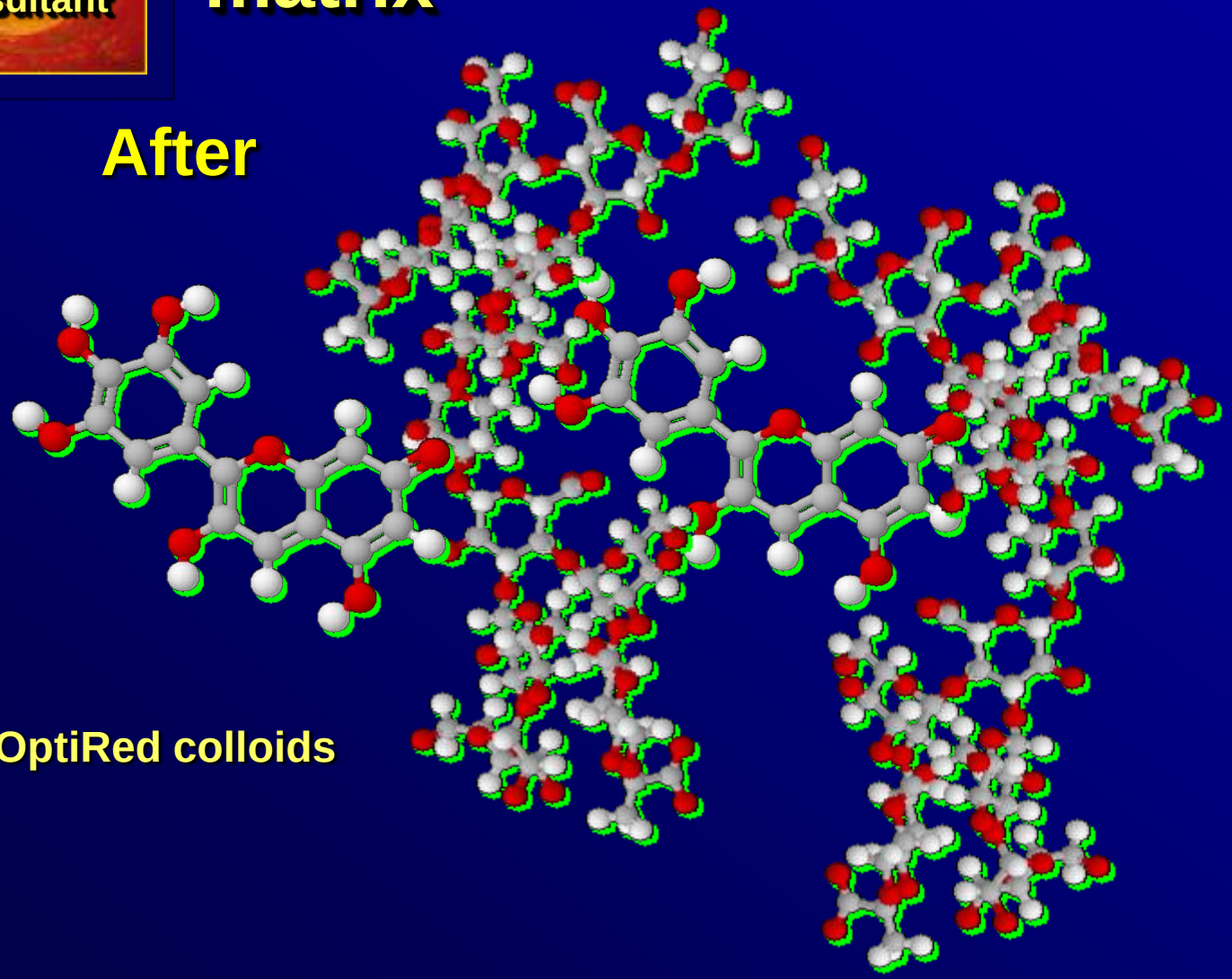
OptiRed® in action on the colloidal matrix

After



Stabilized pigments

OptiRed colloids

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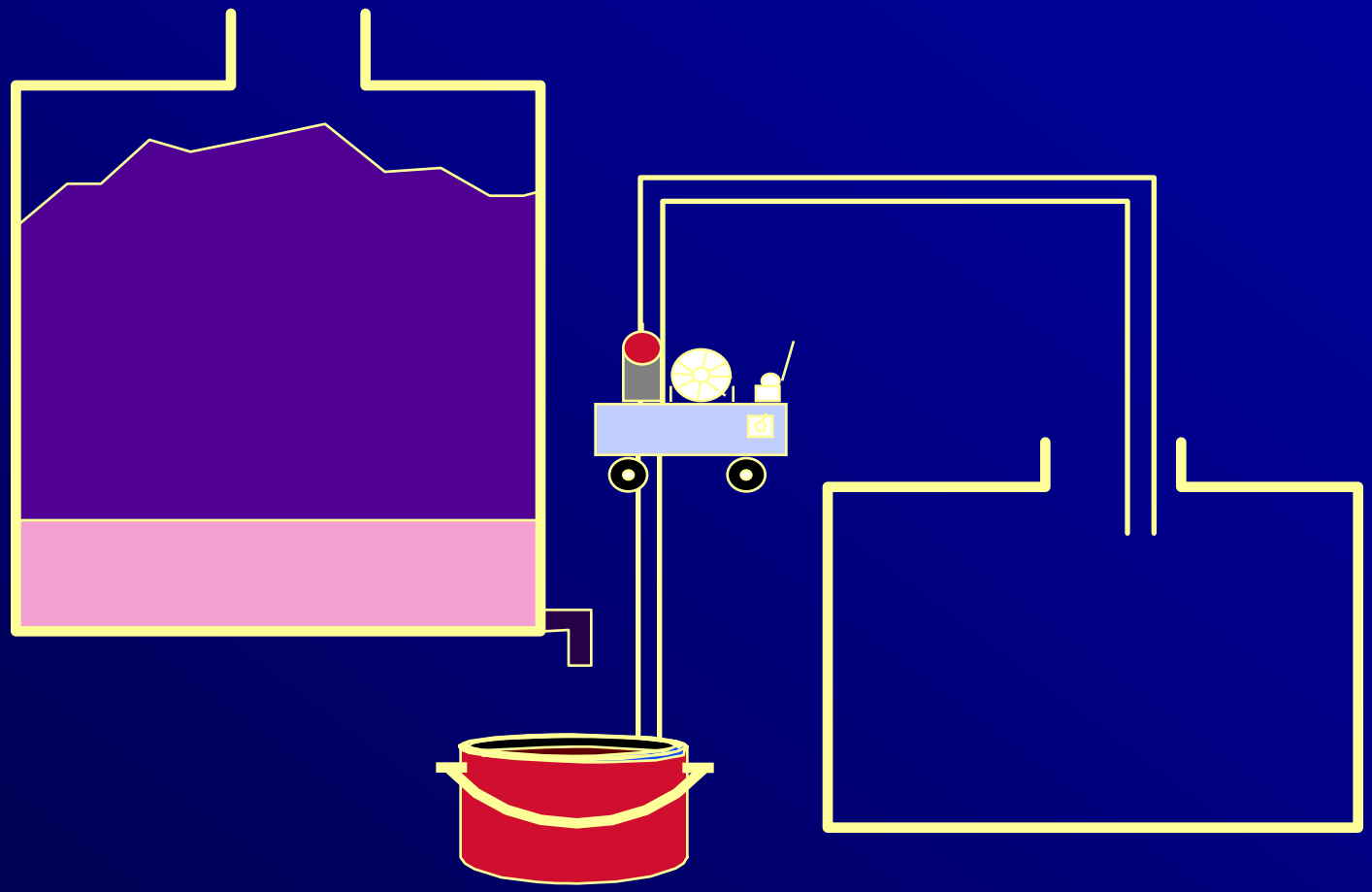
Délestage. Preparation

Délestage can be started as soon as the cap is formed. Délestage is also interesting during cold soak (with little air addition)



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Délestage. Step #1

Notes:

1= yeast and mud at the bottom of the tank

2= fermenting juice not in contact with the pomace

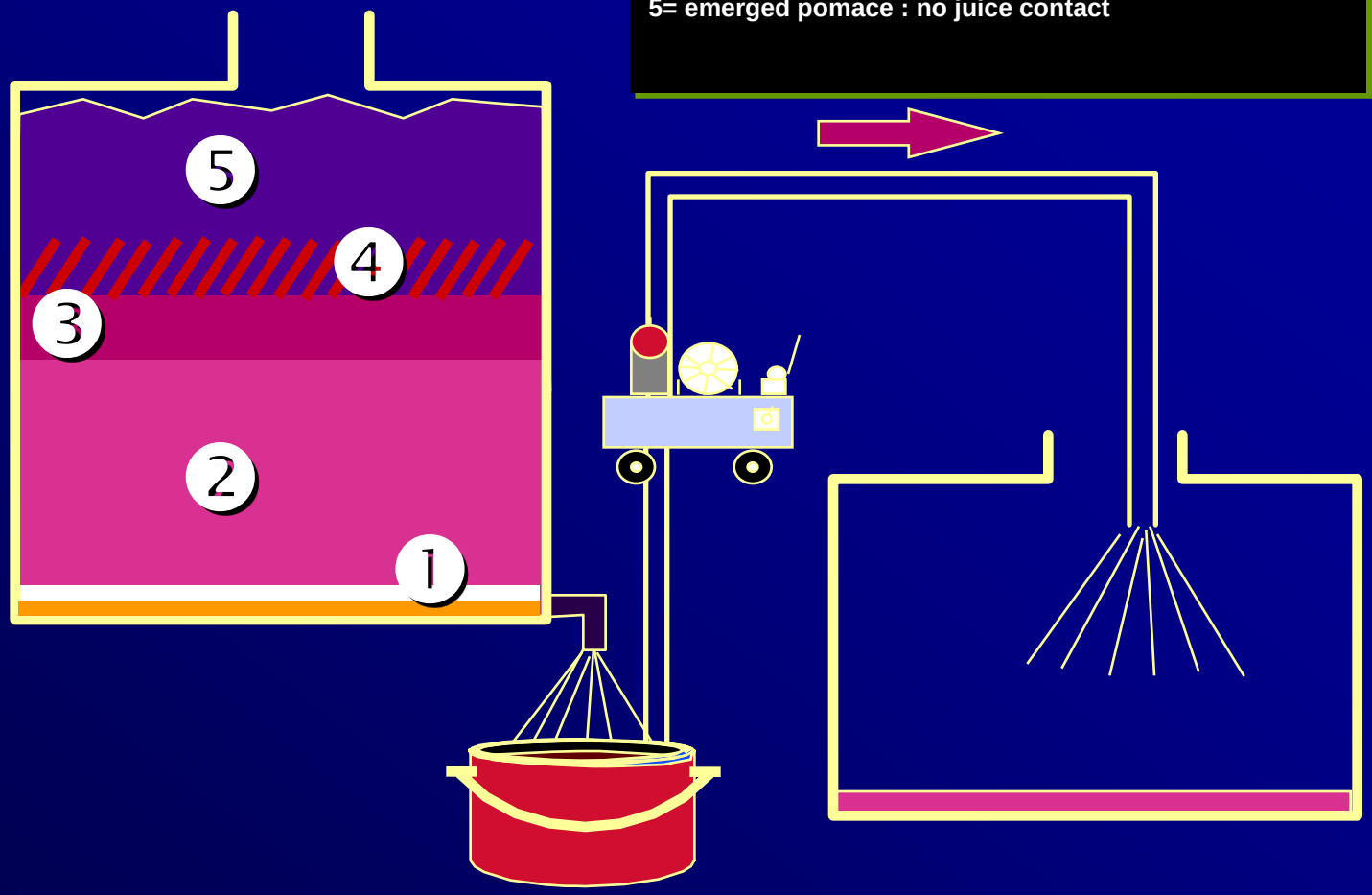
3= pigment and tannins concentrated juice below the pomace : low extraction, low stabilization

4= juice bathing the pomace

5= emerged pomace : no juice contact

First tank is completely drained. An open jet in a bucket allows a true juice oxygenation : 2 to 4 mg/liter dissolved oxygen

Some other systems can give a similar efficiency in adding dissolved oxygen



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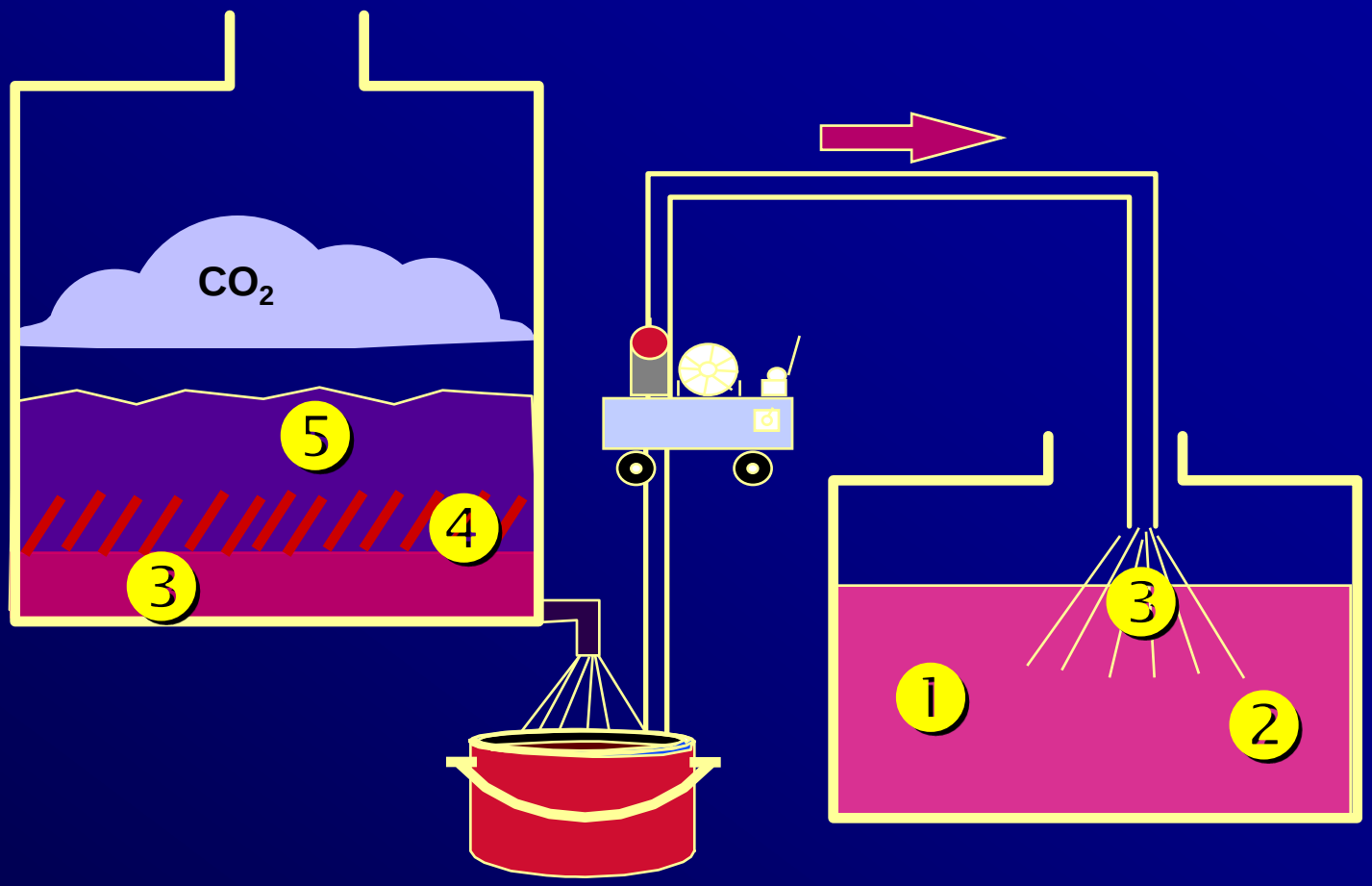
Délestage. Step #1 (cont.)

Complete draining of the first tank is a key point of délestage. The most concentrated juice (the juice just below the cap) is renewed and oxygenated.
A pumping over does not renew this juice. A punching down renews it, but does not oxygenate it.



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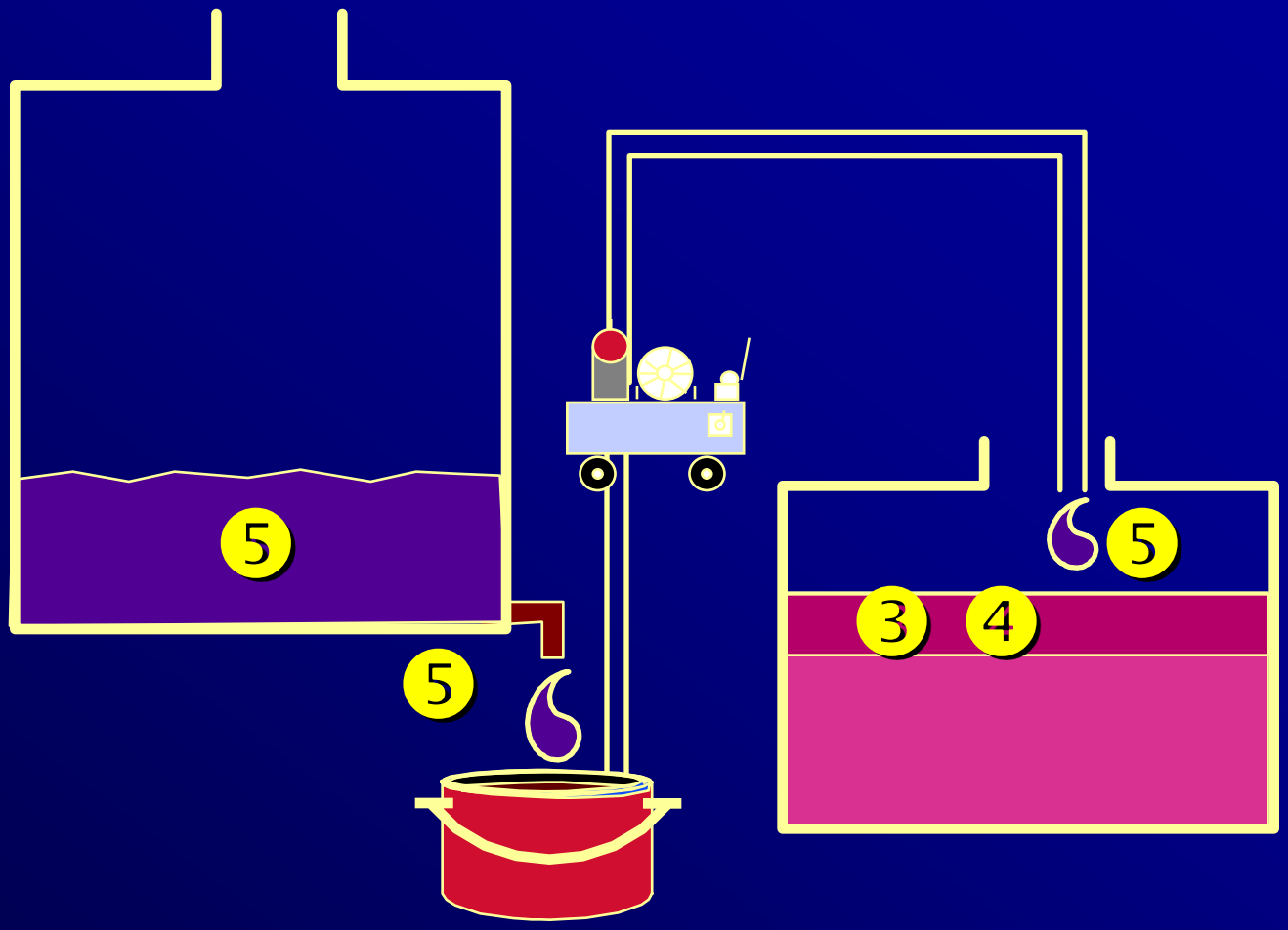
Délestage. Step #2

Complete draining of the cap achieves the diffusion goals : extracts the most interesting grape macromolecules. Complete aeration brings stabilization, tannin « coating / enrobage » and sulfur off-flavor management



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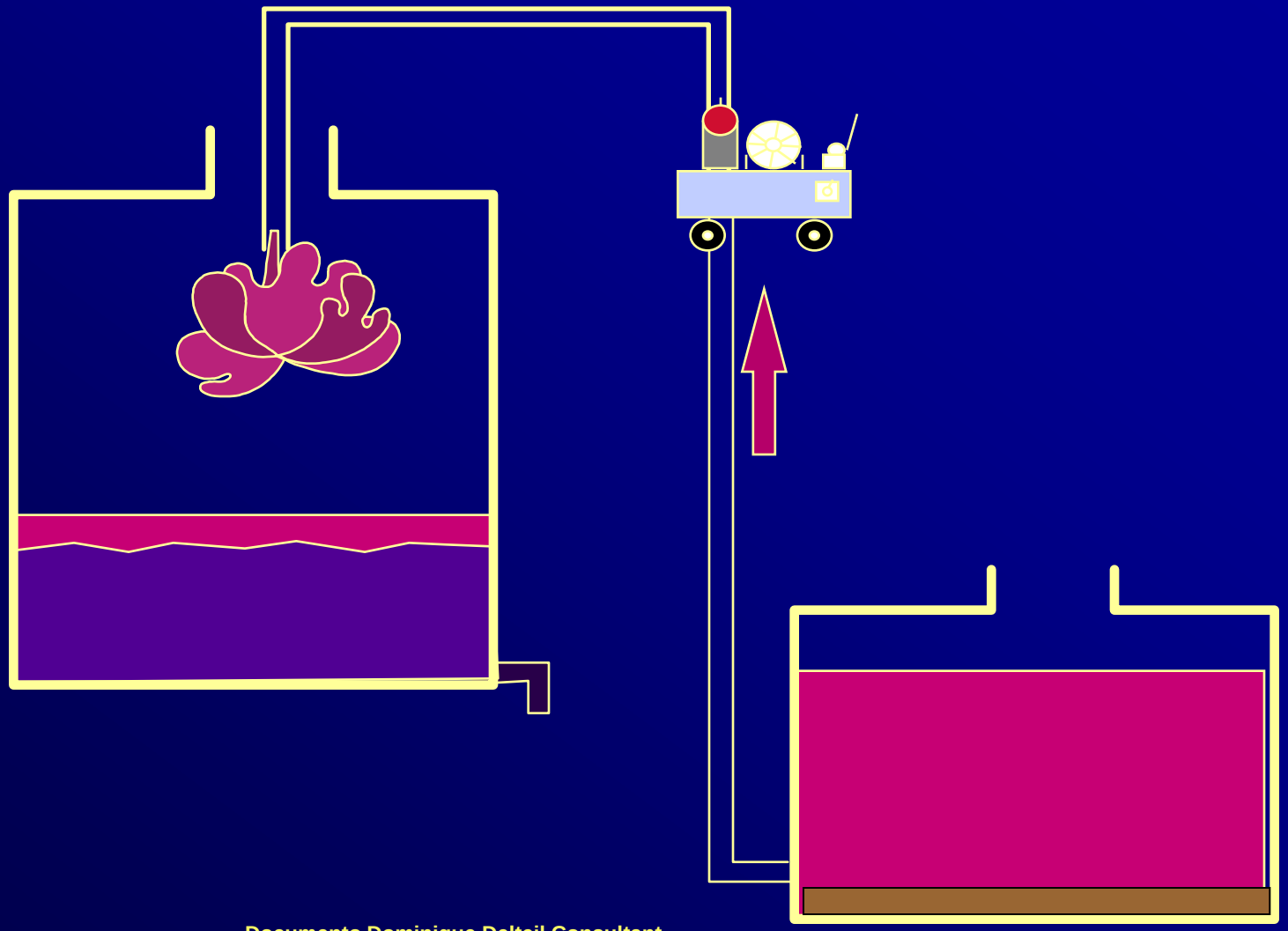
Délestage. Step #3

The return of the juice is done with high flow and low pressure (flooding), to avoid mechanical action on the cap. It is not necessary to look for a complete cap bathing



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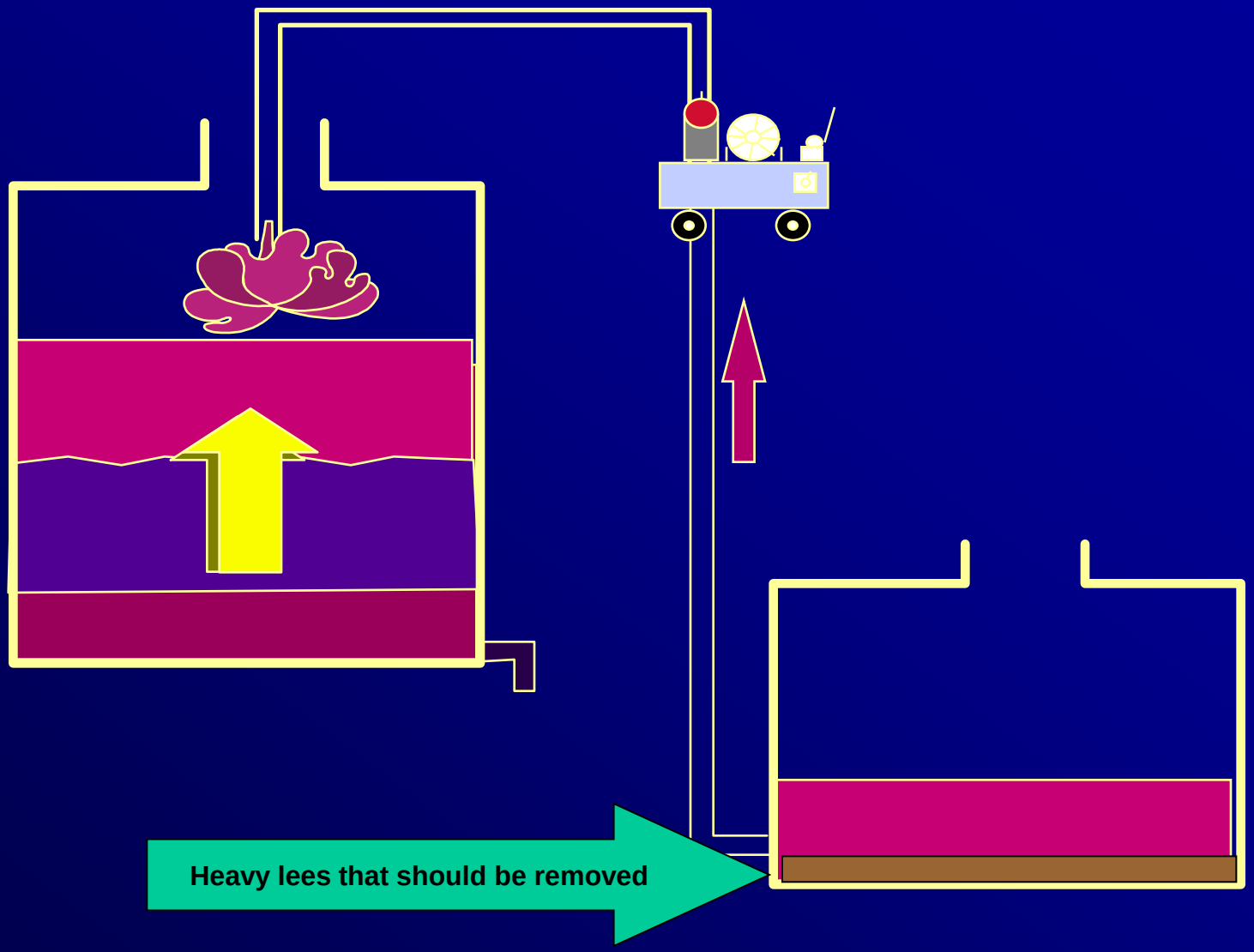
Délestage. Step #4

When the cap stays together, it percolates through the juice or the wine. In other situations, it « melts » in the juice giving also excellent juice / cap exchanges, without violent extractions



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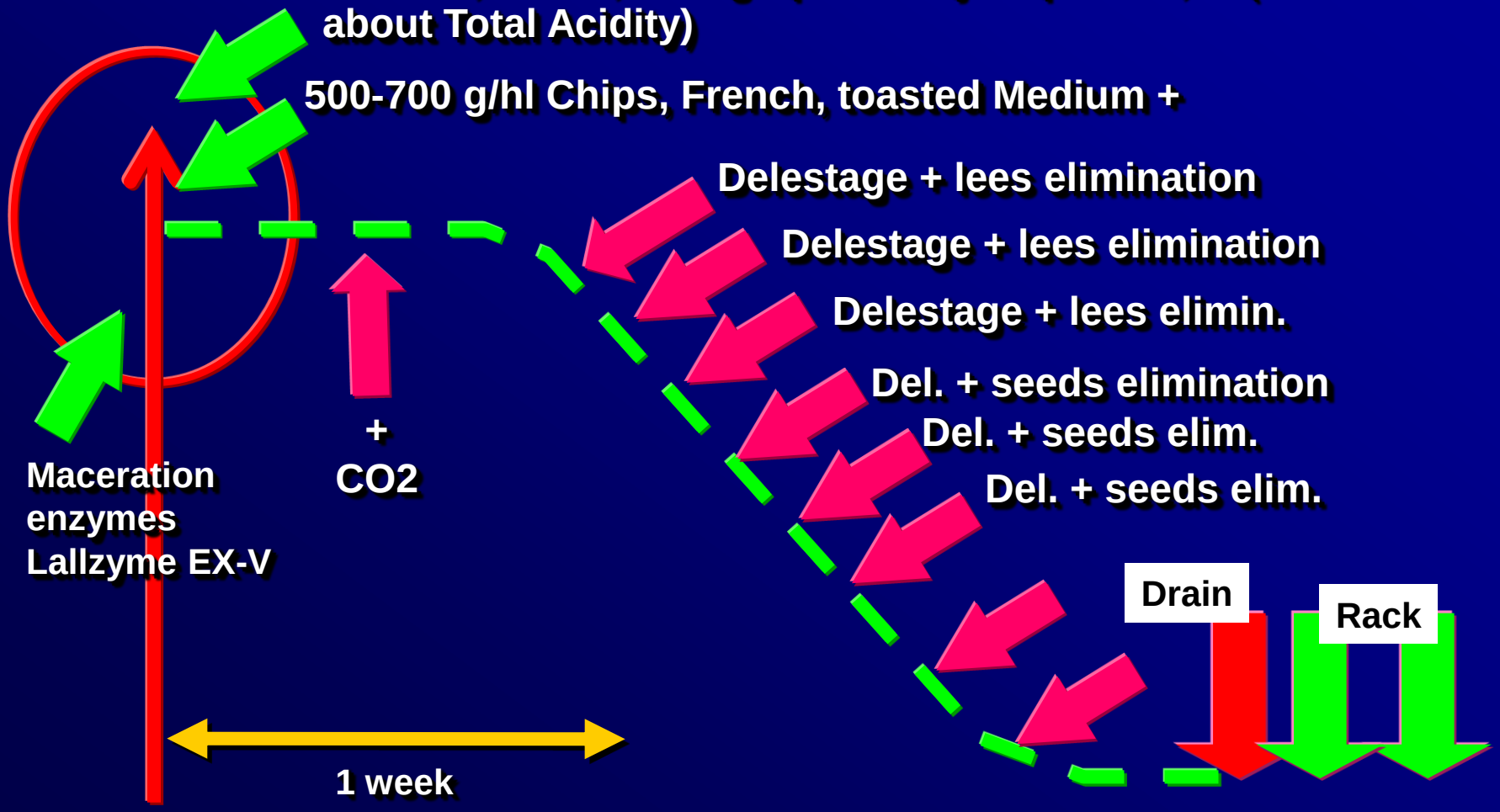
Strategy of maceration



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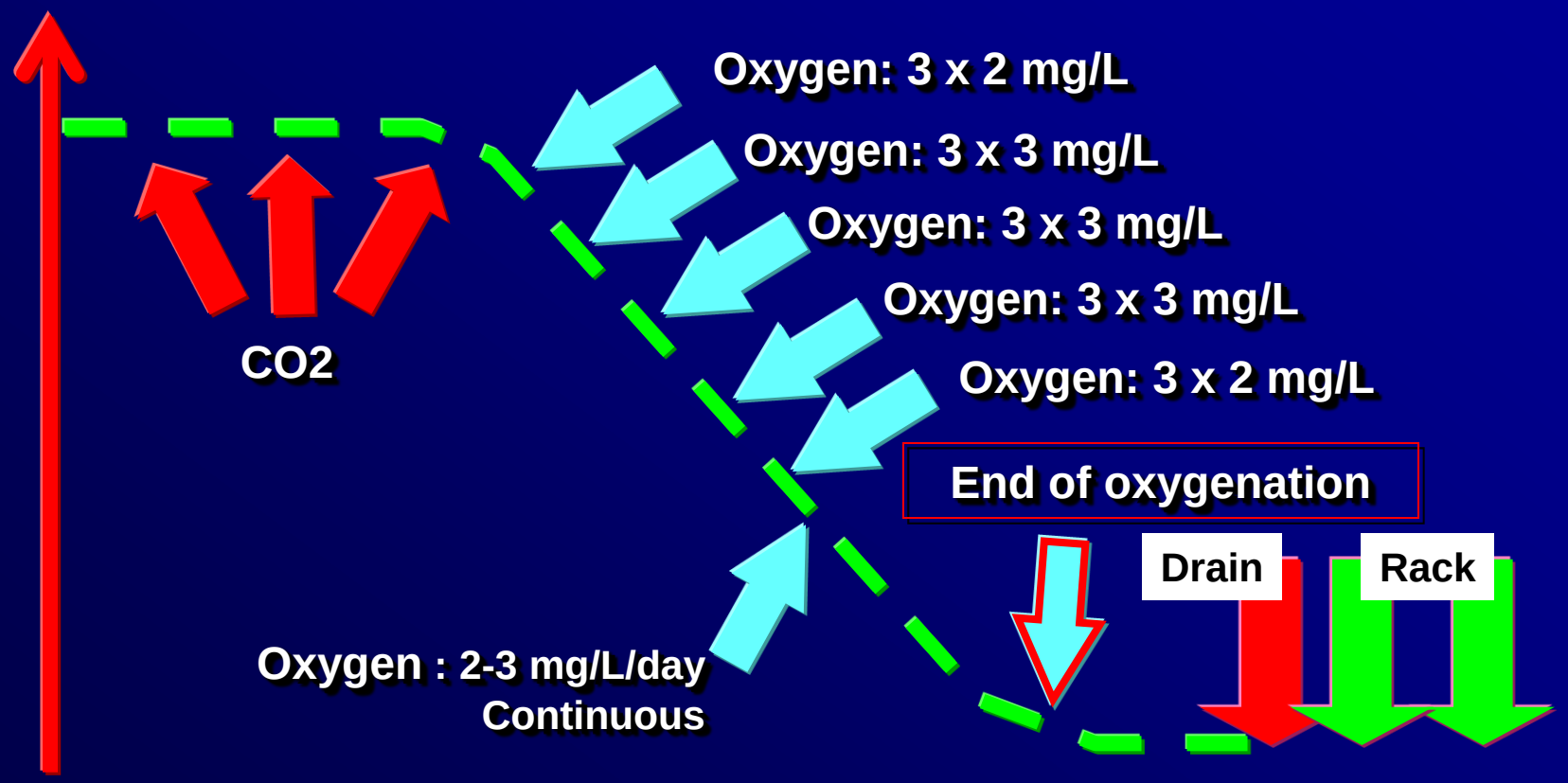
Strategy of oxygenation



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Agitation: a key action in red winemaking

Notes:

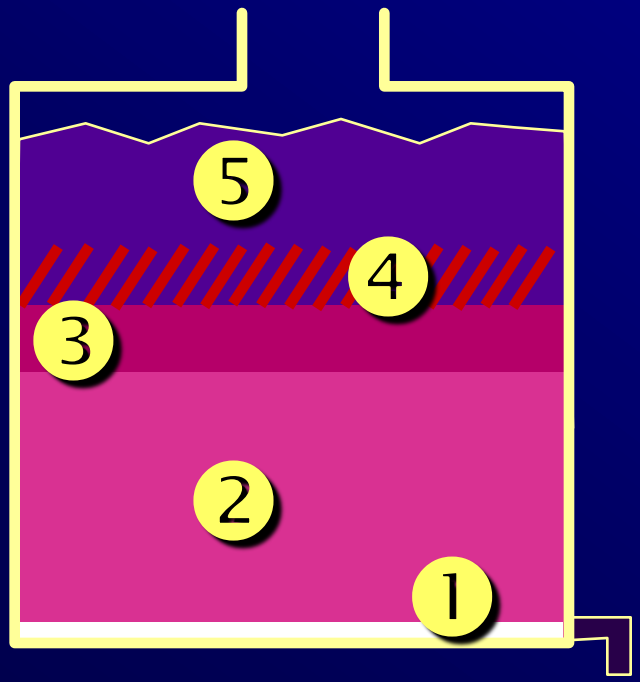
1= yeast at the bottom of the tank

2= fermenting juice not in contact with the pomace

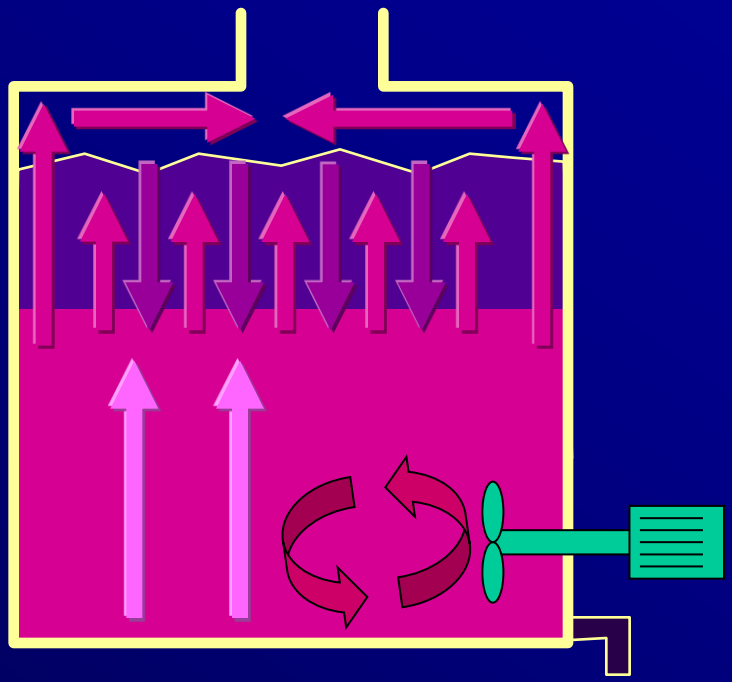
3= pigment and tannins concentrated juice below the pomace : low extraction, low stabilization

4= juice bathing the pomace

5= emerged pomace : no juice contact



Before agitation



During agitation

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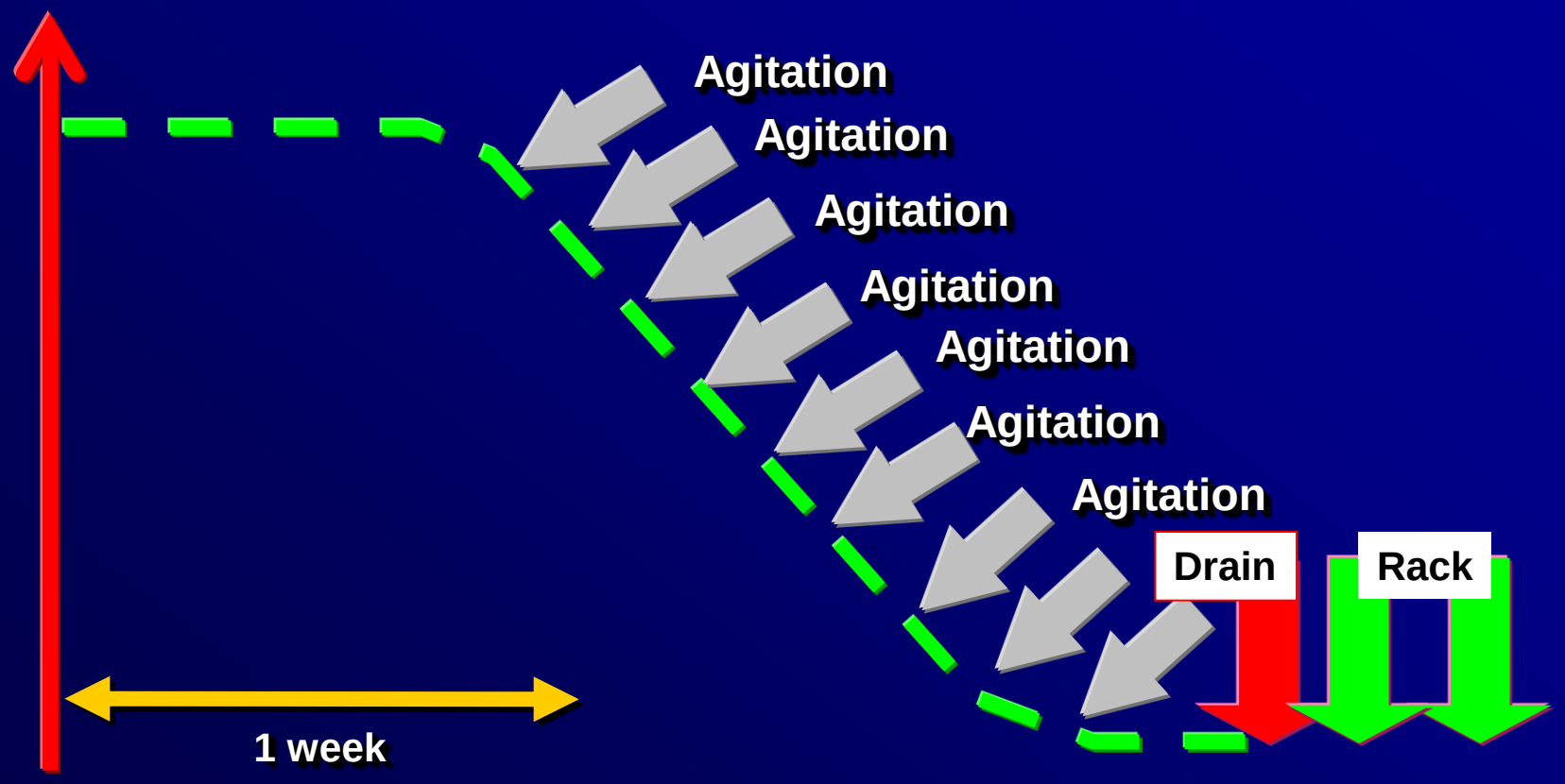
Strategy of agitation



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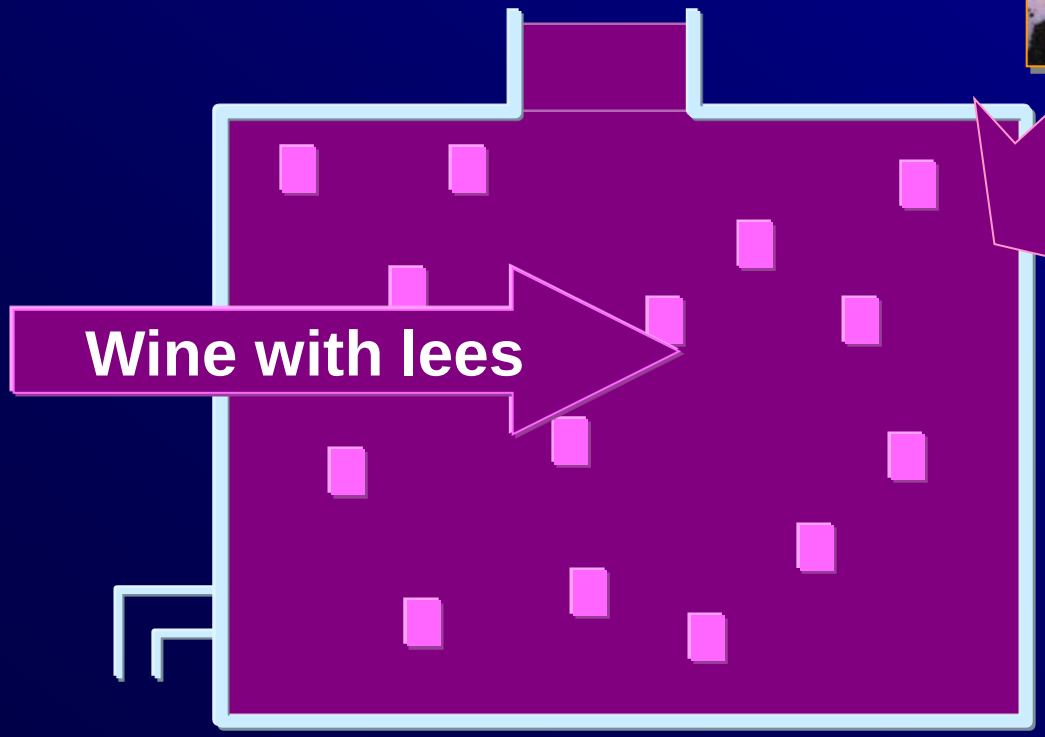
Draining



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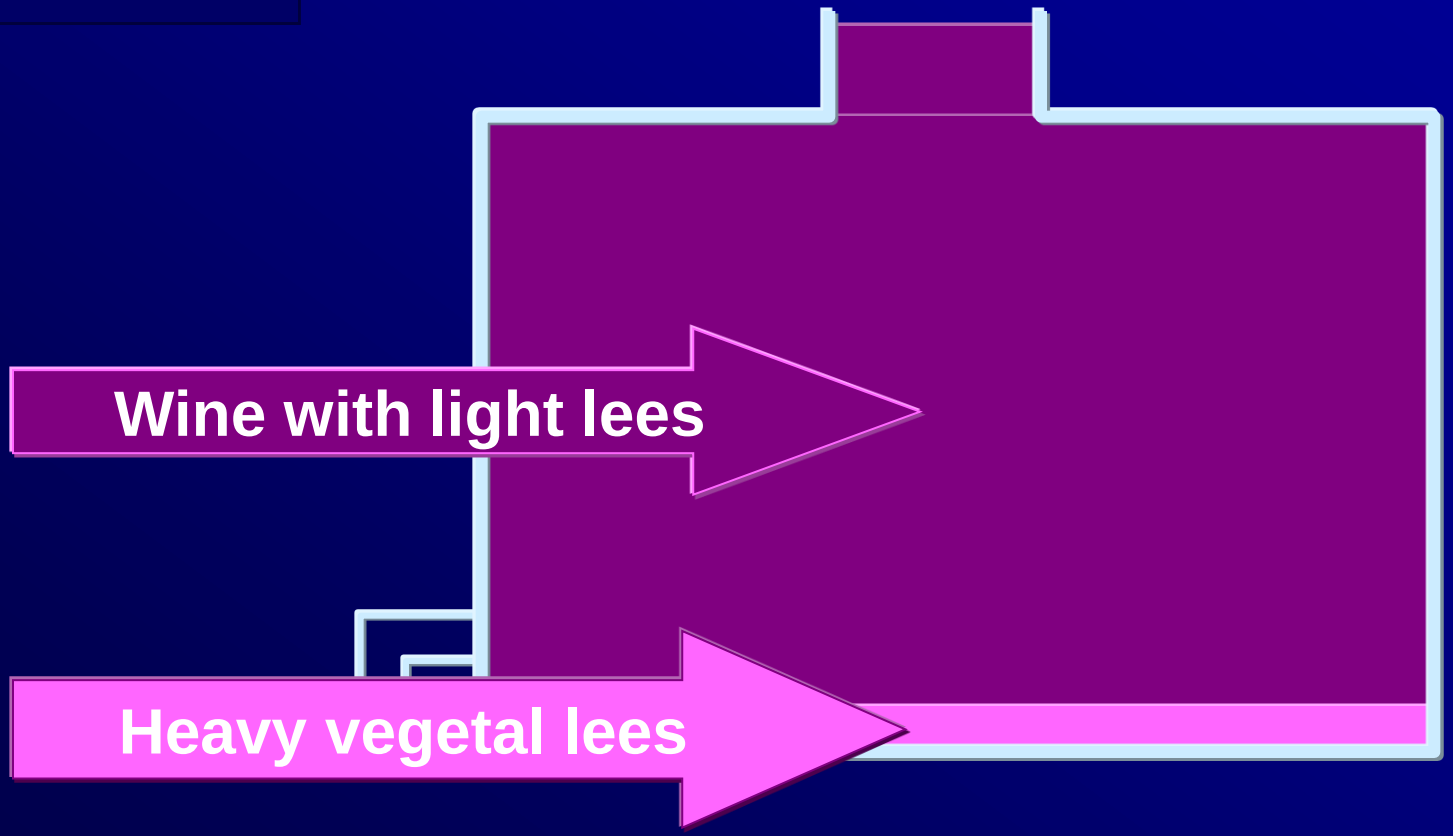
12-24 hours later: Heavy vegetal lees have sedimented



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12-24 hours later: Heavy vegetal lees have sedimented

Wine with light lees

Heavy vegetal lees

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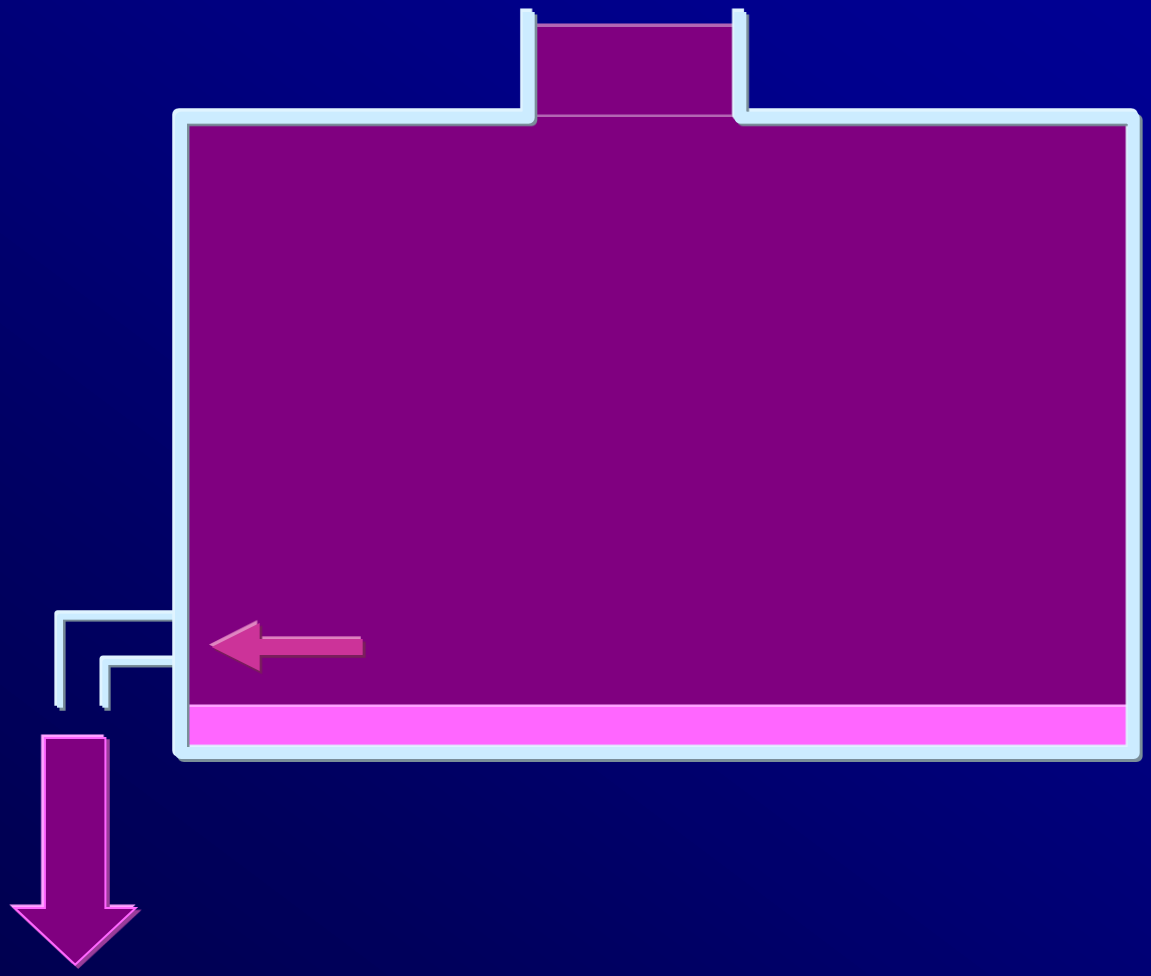
Racking. Step #1



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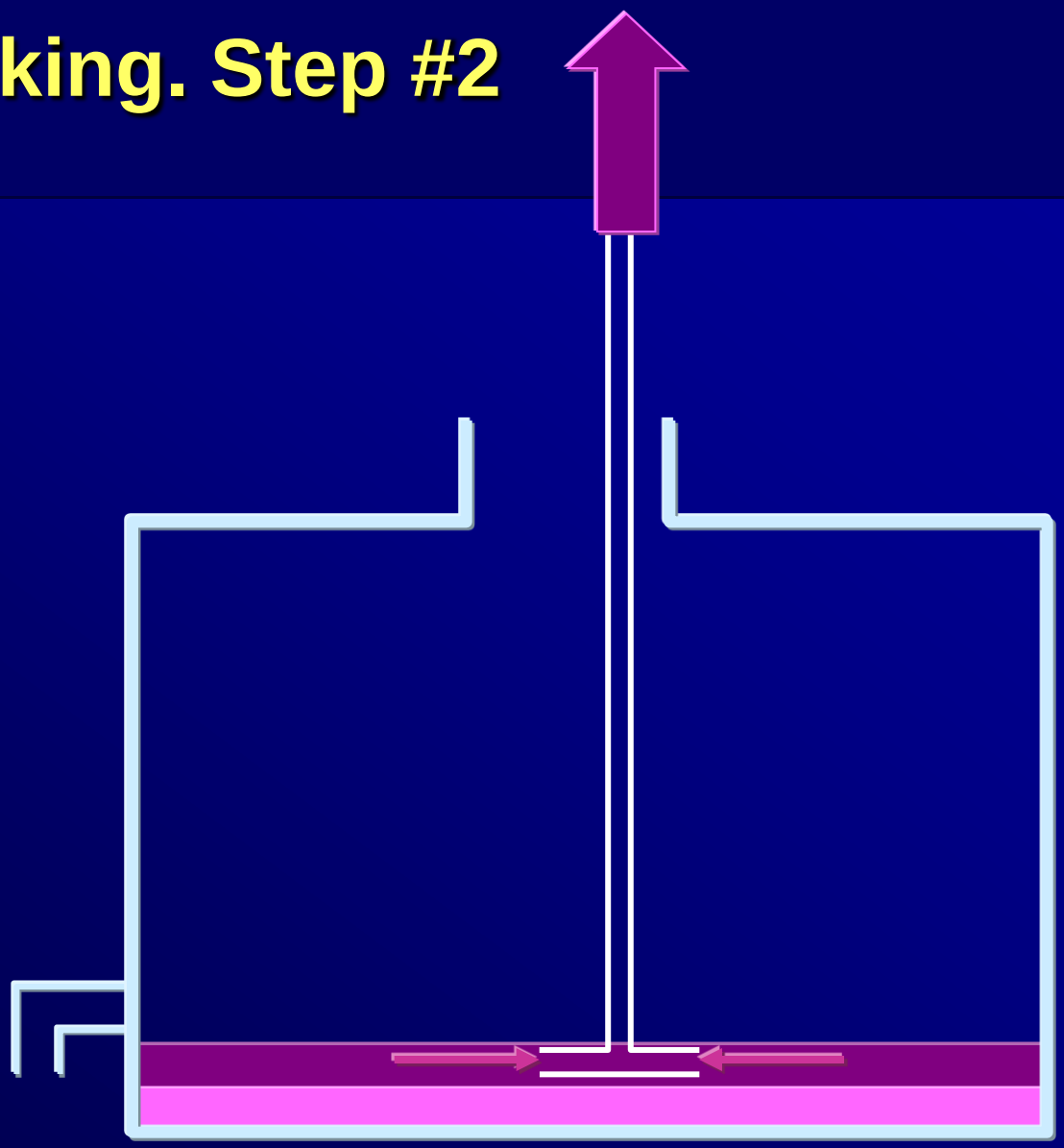
Racking. Step #2



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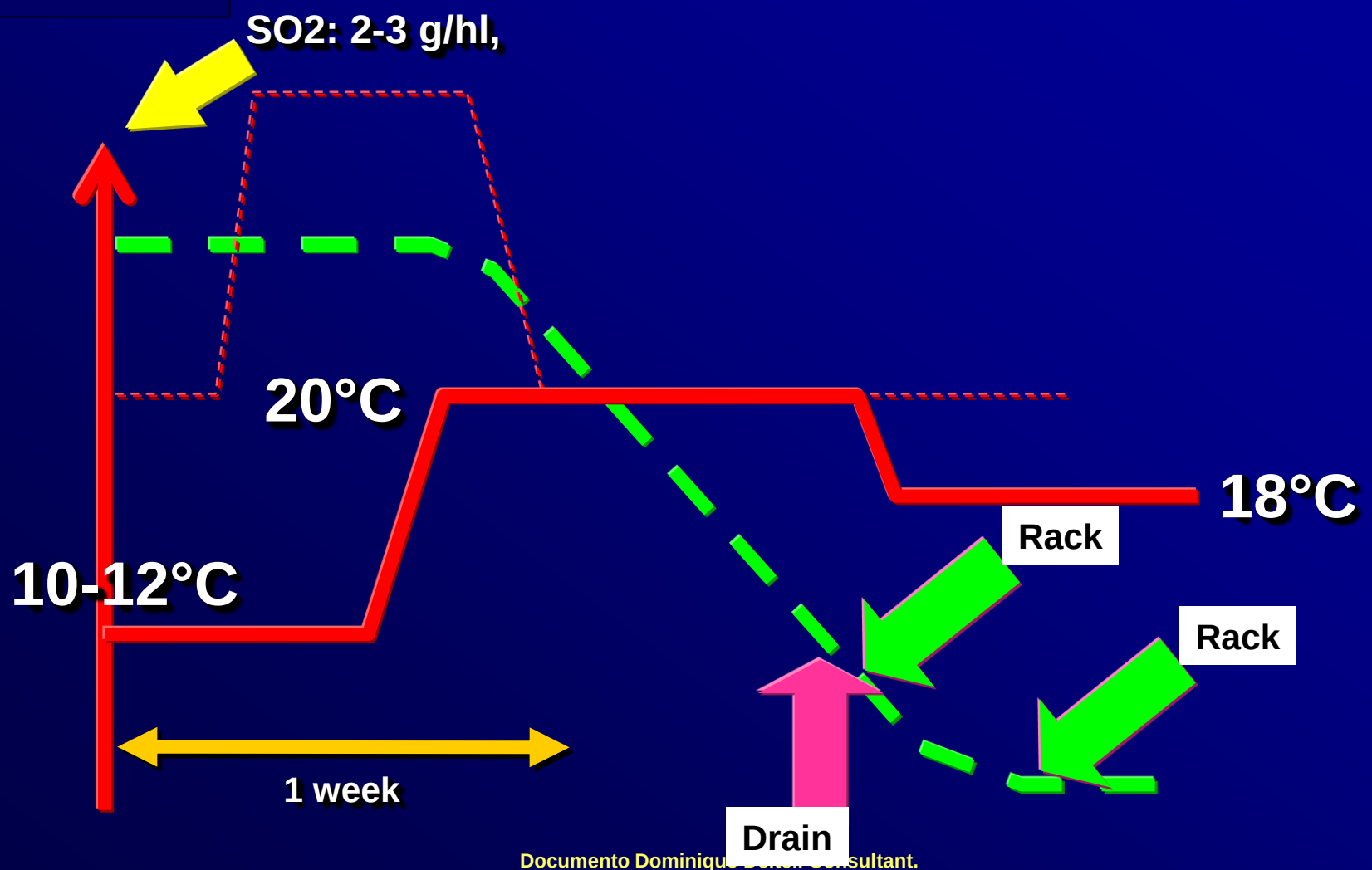
Strategy of temperature with Pinot Noir: with shorter maceration



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Aging

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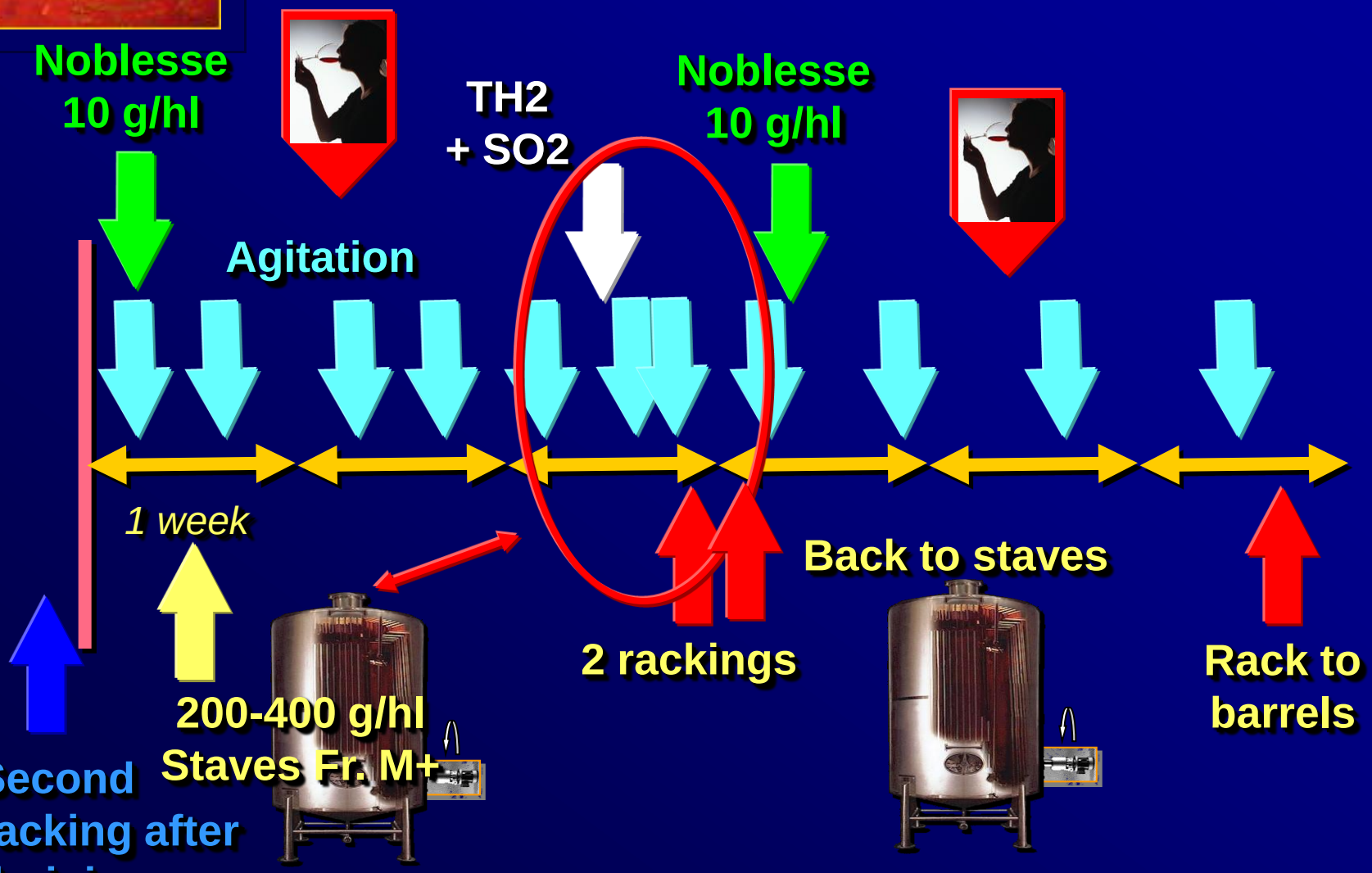
Strategy with agitations and rackings around malolactic



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Doses of SO2 at the very end of malolactic

pH	SO2 added
• 3,30	• 3 g/hl
• 3,40	• 4 g/hl
• 3,50	• 5 g/hl

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Continue to work building the colloidal matrix and the longevity